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BIOFUELS ANNUAL

Bio-fuels Annual

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Report Highlights:
South Africa's bio-fuel production has not changed since we reported in the 2008 Bio-fuel annual that there is no large scale production. Although there are a few bio-fuel projects in the pipeline, large scale production of bio-fuel might only start in 2011. A major constraint to the development of a viable bio-fuel industry in South Africa is the roundly criticized Bio-fuel Industrial Strategy. With the change in South Africa's political dispensation after the election, hopes are high that the debate around the Bio-fuel Industrial Strategy will be reopened.

Post:
Pretoria

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Executive Summary:

Very little data on bio-fuel production is available at this moment as South Africa is not yet involved in bio-fuel production on a large scale. There are a few bio-fuel projects in the pipeline including a sugar beet project, currently the closes to implementation, which will produce 90 million liters of bio-fuel when it becomes operational. However, Post does not foresee any blending of bio-fuels in the South African national liquid fuel supply chain before 2011.

$1 = Rand 8.30 (05/22/09)

Sources:

www.saba.za.org	Southern African Bio-fuels Association.
www.dme.gov.za	Department of Minerals and Energy.
www.sapia.org.za	SA Petroleum Industry Association.
www.cef.org.za	Central Energy Fund.
www.petrosa.co.za	Petroleum Oil and Gas Corporation.
www.sasol.co.za	SASOL.

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Introduction

South Africa still has no workable bio-fuel project from virgin material, despite many policy statements, plans for projects, debates, workshops, etc. over the past couple of years. Bio-fuels continue to flounder in a morass of government inaction, lack of policy determination and the threat to food security. This despite the fact that South Africa is a net exporter of food, including corn and sugar, and the fact that South Africa has enough land to accommodate agricultural production for both food and fuel.

A major constraint to the development of a viable bio-fuel industry in South Africa is the current Bio-fuel Industrial Strategy. With the changes in the South African Government after the election and President Jacob Zuma's appointment of Ms. Tina Joemat-Pettersson as the new Minister of Agriculture, Forestry and Fishery; there is some hope for new, more positive, policy directions in the agriculture sector including the bio-fuel industry. Grain SA, an organization that represents grain farmers in South Africa, has indicated to Post that they will definitely reopen the debate around the exclusion of corn as a feedstock for bio-fuels manufacturing with Ms. Tina Joemat-Pettersson. In the Bio-fuel Industrial Strategy corn as a feedstock for ethanol production was excluded amid concerns about food security and fears of price increases. The South Africa Bio-fuels Association (SABA) is also planning a national bio-fuel stakeholder forum in August to discuss the impact of the current policy on viable bio-fuel production in South Africa.

Nonetheless, there are a few bio-fuel projects in the pipeline that will be discussed later in the document. Post, however, does not foresee any blending of bio-fuels in the South African national liquid fuel supply chain before 2011.

Background: The South African Bio-fuel Industrial Strategy

On December 5, 2007 the South African cabinet approved a national Bio-fuels Industrial Strategy. The new Bio-fuels Industrial Strategy is driven predominantly by the need to address issues of poverty, rural development, and Black Economic Empowerment (BEE). The focus of the strategy therefore is the promotion of farming in areas that were previously neglected by the apartheid system and areas of the country that did not have market access for their produce, most of these areas are in the former homeland areas. This policy is an attempt to achieve a development balance between previously disadvantaged farming areas and commercial farming areas. Bio-fuels plant investment must also have a strong BEE shareholding and a catalyst for the transformation of rural economies and contribute to the government's Accelerated Shared Growth Initiative.

The strategy adopted a short term focus (5 year pilot) to achieve a 2 percent penetration level of bio-fuels in the national liquid fuel supply, or 400 million litres per annum. This will contribute 30 percent to the national renewable energy target for 2013. The proposed blending ratio is B2 or 2 percent biodiesel and E8 or 8 percent bio-ethanol.

The new strategy recommends sugar cane and sugar beet for bio-ethanol production and soybeans, canola and sunflower as feedstock for biodiesel.

The new strategy caused strong reaction by agriculture and industry groups mainly because of the exclusion of corn as feedstock for ethanol production. The use of corn was excluded amid concerns over food security and fears of price increases. The corn famers' disappointment is understandable because they were involved in the early stages of the formulation of the draft bio-fuels strategy. South Africa's potential to produce corn surpluses in a "fairly stagnant" domestic market is well documented and an additional outlet for corn was welcomed. This is in contrast to oilseeds where there is a chronic shortfall necessitating imports exceeding the oilseed equivalent of more than a million tons a year.

Bio-fuel Projects in the pipeline

- The **Industrial Development Corporation (IDC) and Central Energy Fund (CEF)**, both government owned, plan to start two bio-fuels projects with an investment value of more than R3.2 billion ($0.39bn). One of the projects will be located near Cradock in the Eastern Cape and the other will be located near Hoedspruit in Mpumalanga. The plan is for the Eastern Cape project to use sugar beet to produce about 90 million liters of bio-fuel annually, and the Mpumalanga venture to make 100 million liters of fuel from sugar cane. In addition, the IDC and CEF are also evaluating the viability of producing 150 million liters of bio-fuel from sugar cane in Pondoland, which spans KwaZulu-Natal and the Eastern Cape. These three projects will produce nearly enough bio-fuel to achieve the South African Government's goal of a 2 percent penetration of bio-fuels in the national liquid fuel supply by 2012.

The sugar beet project near Cradock is currently the closest to implementation with final approval granted by all stakeholders. The stakeholders are hopeful that the plant will be constructed in the next 18 months. However, farmers in the region have not yet committed a single hectare to sugar beet production, saying they'll only do so if it is more profitable than their existing crops. At least 4,000 hectares must be committed to planting before the R1.5 billion ($0.18bn) plant can be built. Negotiations are still ongoing with the farmers. Without guaranteed feedstock, building the plant would be a pointless and expensive exercise.

- **Rainbow Nation Renewable Fuels Limited (RNRF)** announced a R1.5 billion ($0.18bn) bio-fuels processing plant in the Eastern Cape. The plant, which will be located in the Coega Industrial Development Zone in the Nelson Mandela Metropolitan Municipality, is expected to produce bio-diesel and pharmaceutical glycerin from soybeans from South Africa and abroad. The facility will consume 1.36 million tons of soybeans annually producing 288 million liters of biodiesel making it the largest soybean processing facility in Africa. The investment will provide a significant boost to the Eastern Cape economy. The project is expected to generate R4.5 billion ($0.54bn) in revenue annually and create 350 new permanent jobs. An additional 725 employment opportunities in related sectors and 800 jobs during the construction phase are also expected to be created. The due diligence on the project has been completed and the RNRF is awaiting potential investors before the project can continue.

- **PhytoEnergy SA** plans to produce bio-fuels from canola on 500,000 hectares in the poor rural area of the Eastern Cape Province. The project envisages local production of biodiesel for export to Europe to satisfy European statutory bio-diesel requirements of the future. The biodiesel refinery will be constructed in the East London Industrial Development Zone and will be completed by 2011. PhytoEnergy SA and its Black Economic Empowerment partner are responsible for the capital layout at a cost of about R3.5 billion ($0.42bn). PhytoEnergy SA forms part of the European PhytoEnergy Group with projects in India and the Ukraine. The group is also negotiating with various German and South African financial institutions to acquire further funding. Long-term supply agreements have been secured in Europe.

There are questions about the investors and the suitability of the Eastern Cape for canola production. Currently, South Africa only produces 30,000 tons of canola annually and mainly in the Western Cape. However, the concept of exporting bio-fuel production to Europe may have much wider application (beyond canola) for vegetable oil producers throughout Africa.

- The International Trade Administration Commission (ITAC) received an application from **SASOL** for a full rebate on the import duty of soybeans (currently at 8 percent), for the production of bio-diesel. SASOL indicated that it would need approximately 600,000 tons of soybeans for the initial phase of bio-diesel production. After crushing the soybeans for the oil which would be further refined into bio-diesel, it would then be converted to approximately 480,000

tons of soybean meal. This quantity of soybean meal represents more than 60 percent of soybean meal imports. ITAC announced that the application for the full rebate on the import of soybeans for the production of bio-diesel has been approved for a period of 3 years to enable the bio-diesel industry in South Africa to get off the ground. This rebate is only valid from July 1, 2008 to June 30, 2011; thereafter the applicant has to use local soybeans or import at a duty. To counter the impact the huge market share SASOL will have in the local soybean meal market, the animal feed industry has submitted a proposal to ITAC for the full rebate on the import duty of soybean meal but is awaiting a final ruling. The current low oil prices will affect the viability of this project.

Although both SASOL and RNRF indicated that they will use soybeans as feedstock for bio-fuels production, Post doubts that South Africa will see a huge increase in soybean production. South Africa is a plant oil and plant protein deficient country and has shown a long-term inability to produce sufficient oilseeds or to significantly expand production to meet local human and animal demand. In addition, the focus of the new Bio-fuels Industrial Strategy is not on commercial farmers but more on previously disadvantage communities and emerging farmers which includes a development phase. Over the past ten years, the area planted under oilseeds has fluctuated drastically. Of the 915,100 hectares planted with oilseeds in 2008, sunflowers constituted 69 percent, soybeans 25 percent and peanuts 6 percent. The production of sunflower is the main domestic source of plant protein due to agronomic conditions and oil preferences for human consumption. An important relationship also exists between the area planted under corn and the area planted under sunflowers due to the nature of their substitutability. Sunflowers tolerate the South African hot and dry climate and can be produced economically even when there is not enough moisture to produce most of the other summer crops.

- **Biodiesel Centre** supplies bio-diesel for Woolworths' (a large retail food store) distribution vehicles from used vegetable oil. Currently Biodiesel Centre has two plants, one in Cape Town, and one in Johannesburg. A third plant will be set up in Durban. These are not big plants – the restriction on them is supply of spent oil, which so far has proved to be the only economic input material for actual (not promised) biodiesel projects in South Africa. Woolworths, McDonalds, KFC, and a few other major fast food chains are involved in schemes to process there spent oil into biodiesel and use it in their vehicles.

Sugar Cane and bio-fuels

Despite the fact that South Africa's bio-fuel strategy recognized sugar cane as one of the best feedstock for renewable energy; to date there have not been any investments in the development of a bio-ethanol plant for sugar. The main reasons are that the strategy excluded existing sugar and cane producers from the initiative as the aim is the promotion of farming in areas that were previously neglected by the apartheid system as well as the current economic and financial environment.

However, South Africa can soon get there ethanol from Mozambique. Principle Energy is busy establishing a bio-fuel project in Dombe, Mozambique. The project covers 23,000 hectares, with up to 20,000 hectares to be planted for irrigated sugar cane. The site is characterized by plentiful water for irrigation, fertile soils, and an excellent climate for superior sugar cane yields. The facility focuses on the conversion of up to 2.5 megatons of sugarcane to 65 million gallons of ethanol and about 13 megawatts of exportable electrical power. The project is anticipated to employ over 1,600 people at maturity, and to support the development of numerous tertiary related business opportunities in the Dombe community, providing additional employment and local economic opportunities. Principle Energy has finalized approximately $50 million in funding for the first major development stage, with subsequent funding to be provided by project financing, and additional equity to be raised at a later date as required.

Research and development

A bio-fuels research program was established at the University of Stellenbosch. This five year program worth two million rand ($0.24 million) per year aims to develop completely new technologies especially in the bio-ethanol field, as well as to adapt new and existing technologies to South African conditions. Technology development for commercial bio-fuels production will focus on five key areas:

a) Process development to produce biodiesel from various virgin and waste vegetable oils;

b) Second generation technologies for the fermentation of starch and ethanol from i.e. maize, sweet sorghum, wheat triticale, and sugar beet;

c) Using plant biomass (the most abundant source of carbon in nature) as feedstock for bio-fuels production by biochemical and thermo-chemical conversion, i.e. from waste material in the wheat, sugar, and paper industries, as well as from giant bamboo;

d) Integrating bio-fuels and high-value chemical production into a single bio-refinery, where a range of substrates and products can be combined based on the conditions in a particular local industry and region;

e) Process modeling to produce bio-ethanol, biodiesel, bio-oil, and other clean alternatives (i.e. hydrogen and methanol) from biomass.